Fax Modem

User's Manual

Ver. A
3020-9805

Pan-European Approval

The equipment has been approved in accordance with Council Decision 98/482/EC for pan-European single terminal connection to the public switched telephone network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point.

In the event of problems, you should contact your equipment supplier in the first instance.

Warning Notice to Australian Users

All telecommunications devices are required to be labelled with a Telecommunications Compliance Label, ensuring their compliance with ACA Technical Standards. To ensure continuing compliance to ACA Technical Standards, please ensure the following AT commands are maintained:

ATB0	(ITU/CCITT operation)
AT&G	(No Guard tone)
AT&P1	(33/36 pulse dial make/break ratio)
ATS0=0	(No answer or answer greater than 1ring) or ATS0>1
ATS6=N	(Blind dial delay - acceptable range is 2-5 seconds)
ATS11=95	(DTMF period between 70-255ms)

A total of 3 calls attempts are allowed to a telephone number, with a minimum period between calls of 2 seconds: if the call doesn't connect after 3 attempts, 30 minutes must expire before automatic redialling may be initiated.

Failure to set the modem (and any associated communications software) to the above setting may result in the modem being non-compliant with ACA Technical Standards. Under these circumstance a permit would no longer be valid, with the user subject to significant penalties under the Telecommunications Act.

The modem card must only be used in a data terminal equipment (DTE) e.g. computer, that has a screw down cover /lid. As unsafe voltages (TNV) exist on the modem card, disconnect the modem card from the telephone line while the cover (lid) of the DTE (computer) is removed.

Caution

1. While installing the internal modem card, please ensure there is at least 2mm of air gap between the PCB card and other components in the DTE.
2. For Safety reasons, only connect a Telephone marked with a Telecommunications Compliance Label to the phone port.
3. For Safety reasons, only connect equipment with a Telecommunications Compliance

Label. This includes customer equipment previously labelled, permitted or certified.

Notice for New Zealand Users

- The grant of a Telepermit for a device in no way indicates Telecom acceptance of responsibility for the correct operation of that device under all operating conditions. In particular the higher speeds at which this modem is capable of operating cannot always be expected on network designed to delivery voice telephony be customers. Failure to operate should not be reported as a fault to Telecom.
- In addition to satisfactory line conditions a modem can only work properly if:
  - It is compatible with the modem at the other end of the call and
  - The application using the modem is compatible with the application at the other end of the call. E.g. accessing the Internet requires suitable software in addition to a modem.
- This equipment shall not be used in any manner which could constitute a nuisance to other Telecom customers.
- Some parameters required for compliance with Telecom's PTC Specifications are

dependent on the equipment (PC) associated with this modem. The associated equipment shall be set to operate within the following limits for compliance with Telecom Specifications:

- Not more than a total of 10 call attempts shall be made to the same number for any single manual call initiation within a 30 minutes period.
- There shall be at least 60 seconds between call attempts to the same number.
- Automatic calls to different numbers shall be not less than 5 seconds apart.

Immediately disconnect this equipment should it become physically damaged, and arrange for its disposal repair.

- The correct settings for use with this modem in New Zealand are as following:

ATB0	(CCITT operation)
AT&G2	(1800 Hz guard tone)
AT&P1	(Decadic dialling make-break ratio=33% /67%)
ATS0=0	(not auto answer)
ATS11=65	(DTMF dialling on/off duration = 65 ms)
ATX2	(dial tone detect, but not (U.S.A) can progress detect)

- When used in the Auto Answer mode, the S0 register must be set with a value between 2 and 10. This ensures:
  - A person calling your modem will hear a short burst of ringing before the modem answers. This confirms that the call has been successfully switched through the network.
  - Caller identification information (which occurs between the first and second ring cadances) is not destroyed.
- This equipment does not fully meet Telecom's impedance requirements. Performance limitations may occur when used in conjunction with some parts of the network. Telecom will accept no responsibility should difficulties arise in such circumstances.
- It is recommended that this equipment be disconnected from the Telecom line during electrical storms.
- When relocating the equipment, always disconnect the Telecom line connection before the power connection, and reconnect the power first.

Note

Please note that fault callouts caused by any of the above causes may incur a charge from Telecom.

General Conditions

As required by PTC 100, please ensure that this office is advised of any changes to the specifications of these products which might affect compliance with the relevant PTC specifications. The grant of this Telepermit is specific to the above products with the marketing description as stated on the Telepermit label artwork. The Telepermit may not be assigned to other parties or other products without Telecom approval. A Telepermit artwork for each device is included from which you may prepare any number of Telepermit labels subject to the general instructions on formal size and colour quoted on the attached sheet. The Telepermit label must be displayed on the product at all times as proof to purchasers and service personal that the product is able to be legitimately connected to the Telecom network. The Telepermit label may also be shown on the packaging of the product and in the sales literature, as explained in PTC 100.

Canadian DOC Notice

The Canadian Department of Communication label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee the equipment will work to the user satisfaction.

Before installing the equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunication company. The equipment must also be installed using an acceptable method of connection. In some cases, the company inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Repair to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. Users should ensure for their own protection that the electrical ground connections to the power utility, telephone lines, and internal metallic water pipe systems, if present, are connected together. This precaution may be particularly important in rural areas.

Caution

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termina-

tion on a loop may consist of any combination of devices subject only to the requirement that the total of the load numbers of all the devices does not exceed 100.

FCC Compliance

To comply with the applicable sections of FCC Rules and Regulations, Parts 68 and 15, please follow these instructions:

- Do not connect your modem to a party line or to a coin-operated telephone.
- If your modem should cause a problem on the telephone line, it should be disconnected from the line until it can be determined whether the modem or another device on the phone line caused the problem.
- Only the manufacturer can make repairs to the modem. Other repair methods will void your warranty.
- If you have an external modem, use a properly constructed shielded cable to connect it to your computer.
- If your telephone company asks for the following information, please make it available:
  - Modem manufacturer
  - Model of modem

- FCC Registration Number
- Ringer Equivalence Number (REN)

FCC Part 15

Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the

equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

Caution

Any changes or modifications not expressly approved by the grantee of this device could void the user authority to operate the equipment.

FCC Part 68 Notice

This equipment complies with Part 68 of the FCC rules. On the base of this unit is a label that contains, among other information, the FCC registration number and Ringer Equivalence Number (REN) for this equipment. If requested, this information must be given to your telephone company.

The REN is used to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your number is called. In most, but not all areas, the sum of the RENs of all devices should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the total RENs, you should call your local telephone company to determine the maximum RENs for your calling area.

If the telephone company suspects a problem with your telephone line is related to an add-on electronic device, such as your modem, they have the right to temporarily suspend your service. It is your responsibility to remove from the telephone line any malfunctioning electronic communications equipment to avoid damage to the telephone system.

If your equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC. Your telephone company may make changes to its facilities, equipment, operations, or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subjected to state tariffs.

If you experience trouble with this telephone equipment, please contact your place of purchase for information on obtaining service or repairs.

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Introduction

The Voice/Fax/Data Modem connects your computer to Internet, and all kinds of BBS, and other popular Fax / Modems. This manual describes the features, procedures of installations, and AT command set... etc. of this modem.

Your modem...

There are indicator lights and connectors on the front and back side of this modem. Following is the meaning of these light and connectors for your reference:

1. External Front Panel

MIC	:	Microphone jack.
SPK	:	Speaker jack.
RD	:	Received Data indicator.
TD	:	Transmitted Data indicator.
CD	:	Carrier Detect indicator.
OH	:	Off Hook.
AA	:	Auto Answer indicator.
HS	:	High baudrate Speed indicator.
DTR	:	DTR signal indicator.
MR	:	Modem Ready.
PW	:	Power on indicator.

2. External Rear Panel

PHONE : Phone jack.
LINE : Telephone line jack.
RS232 : RS232 cable socket.
AC-IN : AC adapter input.
ON/OFF : Power switch.

Features

This modem supports the following communication standards. ITU-T is known as CCITT.

Data

- ITU-T V.90
- Rockwell K56flex
- ITU-T V.34, V.32bis, V.32, V.22bis, V.22
- Bell 103 & 212A
- V.42bis & MNP 5 (Data compression)
- V.42 & MNP2-4 (Error correction)

Fax

- V.17 (14400bps FAX)
- V.29 (9600bps FAX)
- V.27ter (4800bps FAX)

Voice

- Voice/Audio mode
- Full-Duplex speakerphone
- AudioSpan (Simultaneous Audio / Voice / Data; SAVD)

Package Checklist

The package contains the following items:

- One fax modem
- One piece of phone cable
- One piece of RS-232 cable
- One CD
- The fax modem user's manual

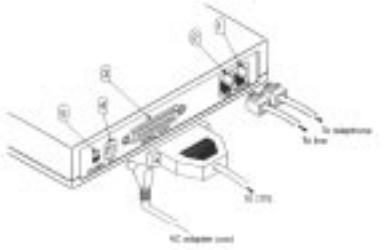
If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

Installations

This chapter describes how to install and power on you fax modem.

Note Do not power on your modem before your finishig the following instatoion

Hardware Installation



1. Plug the male end of the RS-232 cable into the connector marked RS-232 (③) on the back of the modem.
2. Plug the other end of this cable into the serial port on the back of your computer.
3. (Be sure your modem is Power off) Plug the power cable into the AC-IN connector (④) on the back of the modem.

4. Plug the power adapter into a wall outlet.
5. Plug one end of the phone cable into the modem's LINE jack (②). Plug the other end into the phone outlet.
6. To use telephone and the modem on the same line, plug one end of the optional phone cable into the PHONE jack(①) on the modem; plug the other end into the phone. Lift the telephone handset and listen for a DIALTONE to check the connection.
7. Turn your modem on(⑤). The PW, MR lights should light up.
8. Turn your computer on.

Installation Procedures for Windows™ 98

1. Once you have completed the hardware installation, power on your computer. When running Win 98, your system will detect a new device and the following message will appear. Click " Next " .

2. Select the Search for the best driver for your device (Recommended) option, then click " Next " .

3. Place the CD containing driver for Win 9X into your CD ROM drive. Specify the location of the modem driver, e.g., E:\ Rockwell . Click " Next ".

4. The following message will appear. Click " Next " .

5. The installation has been completed. Click Finish.

6. After the installation of Fax Voice Modem was completed, your system will detect Wave Device for Voice Modem and the following message will appear . Click " Next " and then you could follow Step2 to Step5 to finish the installation .

Installation of Communication Software

Please refer to your software manual when you are installing software. Your software must be configured to communicate with the modem on the same COM port and IRQ line used by the modem. Please refer to your software manual for detail procedures.

Commands

Most people use the communication software programs to tell modems what to do. Therefore, you may not use the commands in this chapter. However, if you prefer to communicate with your modem directly, you can type the commands described below.

This chapter describes how to work in the terminal mode.

Typing Commands

- Use the BACKSPACE key to delete typing errors.
- Every command (except **A**/ and +++) must begin with the **AT** or **at** prefix and be entered by pressing the <Enter> key. For example, to execute the **V** command, you would type **ATV** and press the <Enter> key.
- When you see an ***n***, replace the ***n*** with one of the letter or numeric options listed for that command. For example, for the ***En*** command, you might type **ATE1**.

- All defaults are based on the **&F** Hardware Flow Control template load in **NVRAM** when the modem is shipped.

AT Commands

A/ Re-executes the last issued command. Used mainly to redial.

A Go off-hook and attempt to answer a call.

ATS? Read Selected S-Register.

This command reads and displays the selected S-Register. An S-Register can be selected by using the **ATS*n*** command.

D*n* Dial

0-9 DTMF digits 0 to 9
P Pulse (rotary) dial
T Tone dial
W Wait for second dial tone (X3 or higher); linked to S6 register.
^ Toggles calling tone enable/disable.

E*n* Command Echo

E0 Disable command echo
E1 Enable command echo

H*n* Disconnect (Hang-up)

H0 Hang up (goes on-hook)
H1 Go off-hook

I*n* Identification

I0 Report product code

I1 Report "OK"
I2 Report "OK" or "ERROR"
I3 Report firmware revision
I4 Report OEM defined identifier string
I6 Report modem data pump model and internal code revision

M*n* Speaker Control

M0 Speaker is always off
M1 Speaker ON until CONNECT
M2 Speaker is always on.
M3 Speaker off during dialing and receiving carrier and turn speaker on during answering.

O*n* Return to On-Line Data Mode
O0 Go on-line
O1 Go on-line and retrain

P Set Pulse Dial
(for phone line that does not support touch-tone dialing)

S*r*=*n* Set Register *r* to *n*

S*n*? Display contents of S-Register *n*
V*n* Result Code Form
V0 Numeric codes
V1 Verbal codes

Z*n* Soft Reset and Restore Profile
Z0 Restore stored profile 0 after warm reset.
Z1 Restore stored profile 1 after warm reset.

&C*n* Control Carrier Detect (CD) Signal

&C0 CD override

&C1 Normal CD operations

&D*n* DTR Option

&D0 Ignore an on-to-off transition of DTR.

&D1 Switch to on-line command mode without disconnection.

&D2 Normal DTR operations.

&D3 Modem re-initialized. &Y determines which profile is loaded.

&F*n* Load Factory Configuration (Profile)

&F0 Restore factory configuration 0

&F1 Restore factory configuration 1

&W*n* Store Current Configuration

&W0 Store the current configuration as profile 0.

&W1 Store the current configuration as profile 1.

+MS Select Modulation

This command selects the modulation, optionally enables or disables automode, and optionally specifies the lowest and highest connection rates using one to four subparameters.

The format is:

AT+MS=<carrier>,<automode>,<min_tx_rate>, <max_tx_rate>,<min_rx_rate>,<max_rx_rate>

Carrier	Modulation	Data Rates (bps)
V21	V.21	300
V22	V.22	1200
V22B	V.22bis	2400, 1200
V23C	V.23	1200
V32	V.32	9600, 4800
V32B	V.32bis	14400, 1200, 9600, 7200, 4800
V34	V.34	33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, 2400
V90	V.90	56000, 54667, 53333, 52000, 50667, 49333, 48000, 46667, 45333, 42667, 41333, 40000, 38667, 37333, 36000, 34667, 33333, 32000, 30667, 29333, 28000

K56	K56	56000, 54000, 52000, 50000, 48000, 46000, 44000, 42000, 40000, 38000, 36000,34000, 32000
B103	Bell 103	300
B212	Bell 212	1200

<automode>	Option Selected
0	Automode disabled
1	Automode enabled

For example:

AT+MS=K56,1,75,33600,75,56000

Where: K56 : select K56FLEX
1 : automode enabled
75 : min_rate data speed 300 bps
56000 : max_rate data speed 56000 bps

If you want to select V.34 28800 bps only, please insure AT+MS=V34,0,75,28800, 75,28800.

S-Register Definitions

S0 Number of Rings to Auto-Answer
The number of rings the modem waits for before it auto answers.
Range: 0-255 (rings)
Default: 0

S6 Wait Time before Blind Dialing
The time to pause after off-hook before blind dialing.
Range: 2-255 (U.S.)
Default: 2 (Country dependent)

S7 Waiting Time before Carrier Detect
The time to wait for a carrier from the remote modem before hanging up.
Range: 1-255
Default: 50 (seconds)

S8 Pause Time For Dial Delay
The time to pause for the pause dial modifier, "Comma".
Range: 0-255
Default: 2 (seconds)

S9 Carrier Detect Response Time
The time a signal is detected an qualified as a carrier. This timing lets your modem ignore spurious signals that are the same frequency as the carrier. Higher S9 values reduce the chance of a carrier being detected.

Range: 1-255
Default: 6 (0.6 second)

S10 Lost Carrier To Hang Up Delay

The time the modem waits before hanging up for carrier loss.
Range: 1-255
Default: 14 (1.4 seconds)

S11 DTMF Tone Duration

The time for DTMF tone dialing and the time between the tone spacing.
Range: 50-255
Default: 95 (0.95 second, country dependent)